

CLAIMS

We claim:

1. An apparatus for folding an insert for placement within the opening of a taco shell, the apparatus comprising:
 - a first pivot shaft pivotally connected to a frame;
 - a second pivot shaft pivotally connected to the frame;
 - a first lever arm perpendicularly connected to the first pivot shaft;
 - a second lever arm perpendicularly connected to the second pivot shaft;
 - a first folder finger perpendicularly connected to the first pivot shaft and adapted to engage the insert as it passes the first folder finger; and
 - a second folder finger perpendicularly connected to the second pivot shaft and adapted to engage the insert as it passes the second folder finger.
2. The apparatus of claim 1 further comprising a cam follower pivotally connected to the free end of each lever arm, wherein the axis of the cam follower and the axis of the pivot shaft are parallel.
3. The apparatus of claim 1 further comprising a spring having a first end and a second end, wherein the first end is connected to the first lever arm and the second end is connected to the second lever arm.
4. The apparatus of claim 1 further comprising an insert magazine connected to the frame, the insert magazine comprising a channel and a slide block, the slide block having an angled leading face and adapted to slidably displace within the channel, the channel adapted to receive inserts.

5. An apparatus for placing an insert within a nested group of taco shells, the apparatus comprising:

a horizontal shaft; and

a vacuum cup adapted to transport the insert and supported off of a first pillow block having a bore therethrough for receiving the horizontal shaft.

6. The apparatus of claim 5 further comprising a horizontal timing belt and a servo motor, wherein the belt is routed around a drive pulley and a second pulley and interconnected to the first pillow block, wherein the servo motor is interconnected to the drive pulley.

7. The apparatus of claim 6 wherein the servomotor causes the timing belt to displace the first pillow block along the horizontal shaft, thereby causing the vacuum cup to displace horizontally.

8. The apparatus of claim 5 further comprising a vertical shaft and a second pillow block, wherein the second pillow block is supported off of the first pillow block and has a bore therethrough for receiving the vertical shaft, wherein the vacuum cup is suspended off of the vertical shaft.

9. The apparatus of claim 8 further comprising an air cylinder adapted to vertically displace the vertical shaft through the second pillow block, thereby causing the vacuum cup to displace vertically.

10. The apparatus of claim 5 further comprising a cam supported off of the first pillow block, wherein the cam is adapted to open a pair of folder lever arms.

11. An apparatus for nesting individual taco shells to form a nested group of taco shells, the apparatus comprising:

a nester conveyor adapted to transport taco shells to a taco shell nesting station and having a first operational speed and a second operational speed, wherein the first operational speed is greater than the second operational speed; and

a first sensor adapted to detect the passage of taco shells traveling to the nesting station,

wherein the nester conveyor shifts from the first operational speed to the second operational speed when the passage of a predetermine number of taco shells has been detected by the first sensor.

12. The apparatus of claim 11 further comprising a second sensor adapted to detect the passage of the nested group from the nesting station.

13. The apparatus of claim 12 wherein the nester conveyor shifts from the second operational speed to the first operational speed when the passage of the nested group has been detected by the second sensor.

14. The apparatus of claim 11 further comprising an infeed conveyor adapted to feed taco shells to the nester conveyor, wherein the operational speed of the infeed conveyor is less than the first operational speed of the nester conveyor.

15. An apparatus for aligning a nested group of taco shells, the apparatus comprising:

a convergence volume adapted to hold the nested group of taco shells;

a pair of opposed vertical surfaces forming two sides of the convergence volume and adapted to converge towards each other to align the nested group of taco shells; and

a structure located above the convergence volume and adapted to limit the vertical travel of the nested group of taco shells as aligning occurs.

16. The apparatus of claim 15 wherein the structure is a vertically oriented plate, a bottom edge of the plate adapted to contact the nested group of taco shells.

17. The apparatus of claim 15 further comprising a vertical surface forming a third side of the convergence volume and adapted to pivot to become a non-vertical surface.

18. An insert flat or coupon adapted to be placed in a folded configuration and to be inserted within an opening of a taco shell by a vacuum cup, the insert comprising:

a first planar surface adapted to become the outer surface of the insert when the insert is in the folded configuration having at least an opposed first and second free edge portions to define a length and at least an opposed third and fourth free edge portions to define a width defining an upper portion and a lower portion and a centerline extending between third and fourth free edge portions;

a second opposed planar surface adapted to become the inner surface of the insert when the insert is in the folded configuration;

a first arcuate fold line in the upper portion; and

a second spaced apart opposed arcuate fold line in the lower portion,

first and second holes spaced apart along the centerline.

19. The insert flat of claim 18, wherein the vacuum cup contacts the first planar surface between the arcuate fold lines wherein each arcuate fold line extends from the third free edge portion to the fourth free edge portion.
20. The insert of claim 18, wherein the arcuate fold lines are in the form of score lines.
21. The insert flat of claim 18, wherein the first surface is coated with a coating that facilitates adherence by vacuum cups to the insert.
22. The insert flat of claim 21, wherein the coating is an oleophobic coating.
23. A method for placing an insert within an open end of a taco shell, the method comprising:
 - removing with a vacuum cup the insert from a folding assembly of an insert magazine, wherein the vacuum cup moves in a first direction horizontally at a first speed; and
 - moving the vacuum cup horizontally in the first direction at a second speed that is greater than the first speed after the insert has been removed from the insert assembly.
24. The method of claim 23 further comprising horizontally moving the vacuum cup in a second direction at a third speed to approach the insert presented at the folding assembly, wherein the third speed is at least equal to the first speed.
25. The method of claim 23 further comprising moving the vacuum cup vertically.
26. The method of claim 25 further comprising moving the vacuum cup horizontally in a second direction.
27. The method of claim 26 further comprising inserting the insert within the open end of the taco shell.

28. A method for nesting individual taco shells to form a nested group of taco shells, the method comprising:
- operating a nester conveyor at a first speed;
 - sensing the passage of individual taco shells being transported to a nesting station;
 - causing the nester conveyor to operate at a second speed after having sensed a predetermined number of taco shells, wherein the second speed is less than the first speed.
29. The method of claim 28 further comprising sensing the passage of the nested group from the nesting station.
30. The method of claim 29 further comprising causing the nester conveyor to shift from the second operational speed to the first operational speed when the passage of the nested group from the nesting station has been sensed.
31. The method of claim 28 further comprising operating an infeed conveyor, which is adapted to feed taco shells to the nester conveyor, at an operational speed that is less than the first operational speed of the nester conveyor.